CHARTER SCHOOLS IN MISSOURI: STUDENT ACHIEVEMENT AND BEST PRACTICES

**A Report Presented to the General Assembly
By the Joint Committee on Education**

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Joint Committee on Education

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Executive Summary

The following study of charter schools in Missouri was conducted pursuant to RSMo. Section 160.410.4. The two primary components of the study are the evaluation of student achievement gains and a review of administrative and instructional best practices.

A comparative analysis of student achievement gains from 2006 to 2009 showed variation in performance between students in Kansas City Missouri School District (KCMSD) and St. Louis Public Schools (SLPS) and students in the charter schools in each of those cities. School effects were evaluated using a value-added model. In both Kansas City and St. Louis there were charter schools with achievement gains greater than, equal to, or less than their respective district averages as well as the state average.

In addition, seven of eight secondary charter schools reported graduation rates higher than the graduation rates of the traditional public school district in their city.

In the next section of the study, administrator and teacher interviews supplied the data which addressed administrative and instructional best practices. Across all of the interviews, autonomy, finances, and school culture were pervasive themes.

Administrators and teachers spoke favorably of their ability for autonomous decision making and the freedom to make decisions independent from review at a district level. While there is no district-level accountability for charter schools, some administrators in charter schools managed by Education Management Organizations (EMOs) have less autonomy than other charter school leaders. Teachers also said they felt they had more autonomy primarily in terms of flexibility in their teaching. Throughout all the interviews, administrators and teachers spoke of the culture within their schools and most noted it as one of the strengths of their school.

Administrators indicated that their greatest challenge and what they most wish they could change is funding. They mentioned a number of specific concerns from offering competitive teacher salaries to purchasing or expanding facilities.

The diversity among charter schools and traditional public schools does not provide evidence to allow a confident or accurate assertion that one type of school consistently outperforms the other.

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Section 1 – Academic Achievement

Charter schools have been in operation in Missouri since the 1999-2000 academic year. Currently, in Kansas City 20 charters operate on 27 campuses, and in St. Louis 13 charters operate on 22 campuses[1]. The analysis of academic achievement gains and reporting of graduation rates that follows does not include the six charter schools that opened in 2009-2010.

Part A – Academic Achievement Growth

Analysis was conducted by the Missouri P20 Education Policy Research Center[2].

This section provides an analysis of achievement growth of charter school students relative to achievement growth of students in traditional public schools in the districts where charter schools are located as well as students across all Missouri public schools.

Value-added Estimates of Charter and Non-charter Public Schools in St. Louis and Kansas City

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Introduction

During the 2005-06 school year, DESE implemented a new system for assigning unique identifiers to all public school students (MOSIS) and began requiring schools to administer the MAP mathematics and communication arts exams to all students in grades three through eight. These changes make it possible to measure a student's achievement growth over time. With the administration of the spring 2009 MAP exams, Missouri now has linkable test scores for four consecutive years.

This study uses longitudinal MAP student achievement data from spring 2006 to spring 2009 to compute value-added estimates of charter versus non-charter schools in St. Louis and Kansas City. This study is limited to schools with students tested in grades 3-8.

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[1] Source: Missouri Department of Elementary and Secondary Education.
[2] University of Missouri, Truman School of Public Affairs, http://truman.missouri.edu/P20/.

- In Kansas City charter schools on average had larger learning gains in both math and communication arts than did the non-charter (traditional) schools in the district
- In St. Louis charter schools had math achievement gains that were not significantly different from non-charter schools in the district. In communication arts, charter school gains were significantly less than non-charter schools.
- These overall averages mask variation in the charter school sector. In both cities there are some charter schools that perform significantly above non-charters in the district. There are also some charters that performance significantly below.

These are initial estimates based on the new longitudinal student data system in Missouri (MOSIS). Data on student achievement growth, even when aggregated to the school level, have considerable measurement error, and may exhibit some instability from year to year. As this data system matures, and more years of data can be averaged, the reliability of estimates of value-added for any school will improve.

Data

We retrieved MAP score records for the 2006, 2007, 2008, and 2009 testing cycles from the Office of Social and Economic Data Analysis (OSEDA) and removed records assigned to "non-regular" school districts. We conducted several data checking processes to identify and remove test records with duplicate and/or invalid student identifiers before linking records and calculating gain scores. We also examined the grade levels on pairs of matched test records to identify instances where students took the same grade level exam in consecutive years. Those records are excluded from descriptive statistics and analysis. Appendix C contains a detailed description of the specific data preparation steps we completed with corresponding numbers of MAP test records removed for various reasons.

Analytical Framework

Value-added models

Our goal was to compare the performance of charter schools to traditional public schools in St. Louis and Kansas City. We do this by estimating a value-added model (VAM) for all of the schools in the state and then examining the estimated school effects for charter and non-charter schools in the two districts.

An important feature of VAM models is their focus on student achievement growth. School effectiveness is measured by the gains in student achievement they produce for a typical student.

The models we estimate are presented in simplified form below:

Gain Score = X*B1 + (school effects) + e   (1)

Two versions of the model are estimated – one for math and one for communication arts. The dependent variable is a gain score for an individual student, which is simply the spring-to-spring change in a student's communication arts or math MAP scores. X is a set of control variables (discussed in more detail below), and B1 is a vector of coefficients that indicates how each control is associated with test score gains. School effects are a set of binary indicator variables, where the indicator for the school in which the student was MAP tested in the given year and grade is set to one, and all other school indicators are set to zero. In our model there are roughly 1700 of these school variables. Finally, "e" is a residual that captures measurement error and other omitted factors that affect a student's gain score that are not included in the model.

The model is fitted to the data using Ordinary Least Squares (OLS) methods. The standard errors are computed in a way that takes account of clustering of student and school observations (i.e., there are multiple observations of the same student, and students within schools). Because we estimate the school effects from a model that predicts individual student scores, each school-effect estimate can be interpreted as capturing the average deviation from predicted student performance at that school. For example, a large positive number suggests that a school's students, on average, are doing better than would otherwise be predicted based on prior performance and the other controls in our model (see below).

The school effects that we report are adjusted so that the average school effect is zero statewide. Thus if a school has a significant positive value, it means that it performs better than the average school in the state, and vice versa for a negative value.

The X*B1 term can be thought of as a filter or an adjustment factor. The idea is to standardize or "control for" various student factors when comparing schools. There are three sets of variables included in X.
- Grade and year indicators
- Prior year student test scores
- Student characteristics

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The grade and year indicators simply allow for the fact that the state-wide average gain scores of students are not the same from one grade to the next, and that the gain scores are not entirely stable from year to year. Including these variables has the effect of homogenizing the composition of the student body by grade and year in comparing one school to another (Ehlert, et.al., 2009).

The prior year test scores are a crucial element in the model. Although the dependent variable is a gain score, in fact, the gains a student can expect to make are also a function of the prior level of achievement in both subjects. We include the math and communication arts test scores from the prior year in the model, as well as the square of both of these scores (to capture non-linearity of these effects). They are consistently significant.

Finally, we include a set of student characteristics. These include variables indicating whether the student was in the school less than a full school year (mobile student), free and reduced price lunch eligibility status, English language learner status (LEP), special education status, and indicators for the gender and race of the student.

The estimated coefficients (B1) are presented in Appendix D. Above we noted that X*B1 can be thought of as a filter or adjustment. Our primary focus is in estimating school effects. X*B1 can be thought of a factor that homogenizes the composition of the student body in comparing schools. Alternatively, X*B1 can be thought of as a set of variables that "forecast" a student's gain score. If students in school A on average do better than what we would forecast based on X*B1 then school A will have a positive effect. If students in school A do worse than forecast by X*B1 then that school has a negative effect.

Limitations

These estimates, while informative, should be not be taken as a definitive estimate of the effect of charter schools. There are a number of reasons for caution. The first concerns what researchers call "selection bias." While we have controlled for prior test scores in both communication arts and math, and for a variety of characteristics of students, it may be that there are other factors about students that systematically differ between those who attend a charter school and those who attend traditional public schools. For example, some charter schools are explicitly targeted to "at risk" students. Presumably, these are students with risk factors that may not be fully captured in lagged test scores and other student covariates. These may be students with exceptionally difficult home situations (e.g., homelessness, abuse). The estimates we present may not fully adjust for these risk factors.[3]

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[3] This has led some researchers to use data that approximates "natural experiments" for charter school studies. Hoxby and Muraka (2009) and Abdulkadiroglu (2009) in studies of charter schools in New York City and Boston use

A second limitation concerns duration of exposure. These estimates of school effects are based on one year gain-scores for students. If the effects of charter schools are small but accumulate over time, or require some period of time to begin to take effect, these one-year effects may underestimate the true effect of charter schools. In spite of the fact that the MOSIS system has been in place for several years, it is not at present possible to provide charter school estimates that take account of the length of exposure of the student to the charter school. This will be possible in future studies, however.

Finally, we are only able to examine charter schools enrolling students in grades 3-8 (the MAP tested years). We could not examine the effect of charter schools in earlier grades, since there is no state-wide assessment given in those grades. However, the new End of Course (EoC) assessments were introduced in Spring 2009. In future years we will be able to undertake value-added estimates in high schools.

Estimates

Figures 1-3[4] report charter school effects in math in St. Louis. Note that these charter and non-charter school effects are nested in a larger model of student gains for all Missouri schools. In Figures 1 and 2 we report school effects for all Missouri public schools with at least 20 MAP scores over the period 2006-2009. Each dot represents an estimated school effect; 1762 school effects are presented. [5]

We have transformed the effects estimated in the model into standard deviations and normalized them so that a school that produces the average gain has a school effect of zero. A school with a positive effect produced student achievement gains that were larger than expected given the background of the students and prior achievement scores, and vice-versa for a negative score. Along the horizontal axis we present the level of student poverty or the percent minority enrollment in the school.

In Figures 1 and 2 we have highlighted all of the St. Louis schools. The St. Louis non-charter schools are shown in green. Dark green dots are significantly

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data on queues of students applying for charter schools. These schools are oversubscribed and by law students are admitted based on lotteries, thus creating the potential for a randomized study. They compare achievement gains for students lotteried in with those who are not admitted. Both studies find large positive effects of charter schools on student achievement. Unfortunately, we do not have data on waiting lists for St. Louis and Kansas City. A research institute at Stanford University (CREDO) produced aggregated charter school estimates for 17 states using data from 2006-2008. We have not attempted to replicate their methodology or estimates, but their findings are broadly consistent with this ours. For a survey of research on charter schools see Jansen and Gronberg (2009).

[4] All figures referenced in this section can be found on pages 8-20.
[5] Each school with 21 or more MAP scores is treated as a separate school. Some charter schools operate multiple campuses. If they meet the former criteria they are treated as separate schools in this analysis.

above or below the state average. In the case of light green dots, the school effect is not significantly different from the state average. The same convention holds for charter schools (red). Dark red dots denote schools significantly above or below the state average.

In math, of the 13 charter schools for which we had more than 20 MAP gain scores, in 8 of thirteen cases the charters scored significantly below the state average.

Figures 1 and 2 compare St. Louis charter (and non-charter) schools to the state average. In Figure 3 we test an alternative hypothesis by comparing St. Louis charter schools to the average non-charter public school. The average school effect in the St. Louis non-charter schools was -.13 standard deviations. Using this as a comparison benchmark, five of the 13 charter schools scored above the district average and one was insignificantly different.

Figures 4-6 provide similar estimates for Communications Arts. Of the 13 charter schools, one is significantly above the state average, and three are not significantly different. If we restrict the comparison just to St. Louis schools, two charters are above the St. Louis average, five insignificantly different, and six are significantly below.

Figures 7-9 provide Math MAP estimates for Kansas City. In Kansas City there are 19 charter schools with grade 3-8 MAP scores. Five of these are significantly above the state average, five are statistically indistinguishable from the state average, and nine are significantly below the state average (Figures 7 and 8). If we use the Kansas City schools as the comparison group, six charters are significantly above the Kansas City average, five are at the average, and eight are significantly below the average (Figure 9).

Figures 10-12 present Communications Arts estimates for Kansas City. Of the 19 charter schools, four are significantly above, six are significantly below, and nine are not significantly different from the state average. When we switch to Kansas City non-charters as our benchmark, seven charters are above the Kansas City average, nine are not significantly different, and three are below the non-charter average.

Finally, Figure 13 provides a comparison of charters as a group with non-charters as a group in both cities. In both cases, the comparison is with non-charters in the same city. In Kansas City, we find charter schools outperforming non-charters on both math and communication arts. The charter-non-charter difference is .05 and .04 standard deviations, respectively, in math and communication arts. In St. Louis, there is no significant difference between charters and non-charters in math. In communication arts, the average gain is .03 higher in the non-charter schools.

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CREDO (2009). *Charter School Performance in Missouri.* (June).

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Hoxby, Caroline and Murarka (2009). *Charter Schools in New York City: Who Enrolls and How They Affect Their Student's Achievement.* NBER Working Paper 14852.

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Figure 1. Standardized School Effects on MAP Math Performance
vs. Percent Eligible for Free/Reduced Priced Lunch
(St. Louis)

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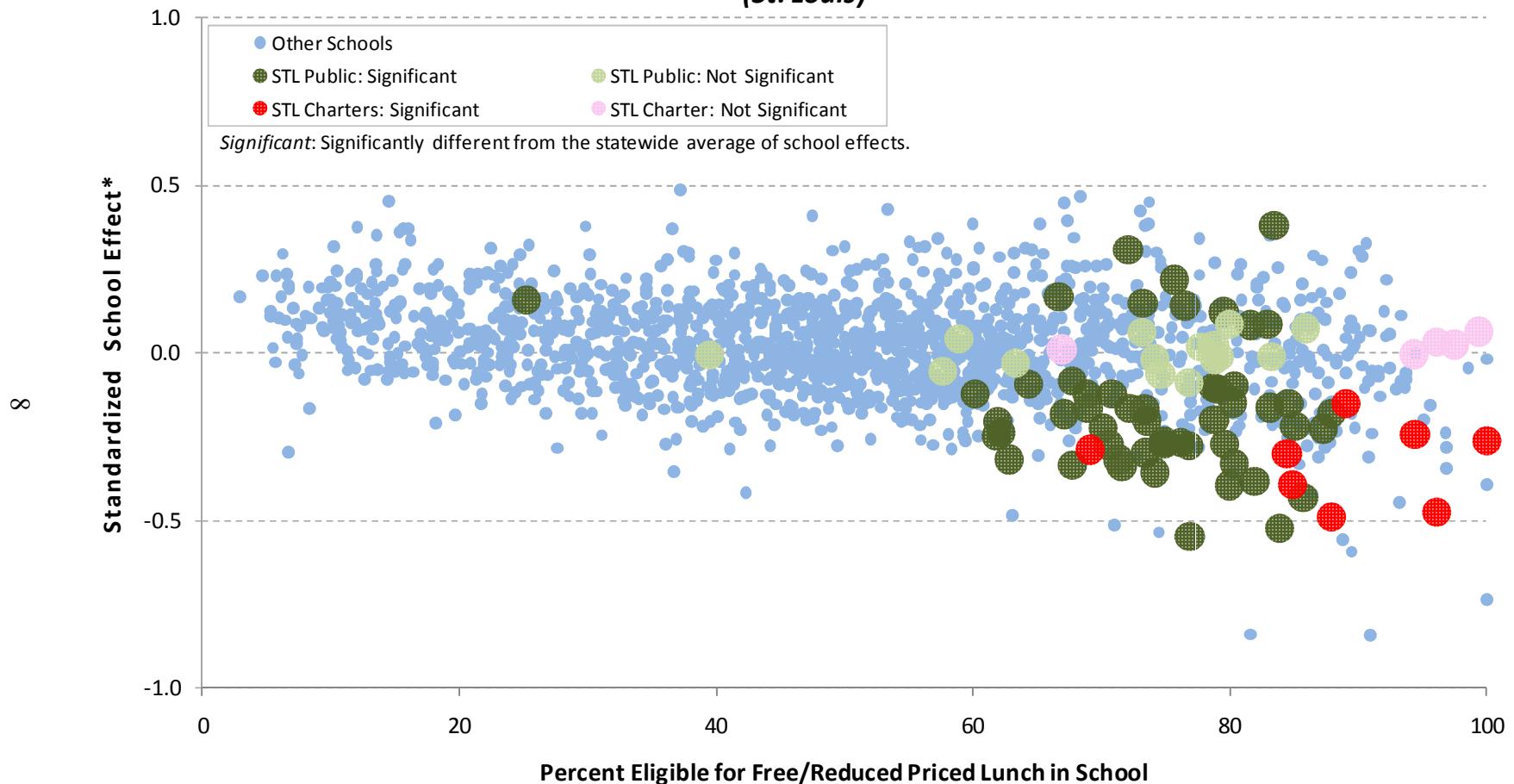
*Standardized School Effect$_i$ = (School Effect$_i$ - Average of School Effects) /StDev of Scale Scores

 (*StDev of Scale Scores* = Weighted Average of by-grade Stdev of Scale Scores, for grades 3-8)

Note: Number of schools = 1,762 (with more than 20 valid test scores in both subjects)

Figure 2. Standardized School Effects on MAP Math Performance

vs. Percent Minorities
(St. Louis)
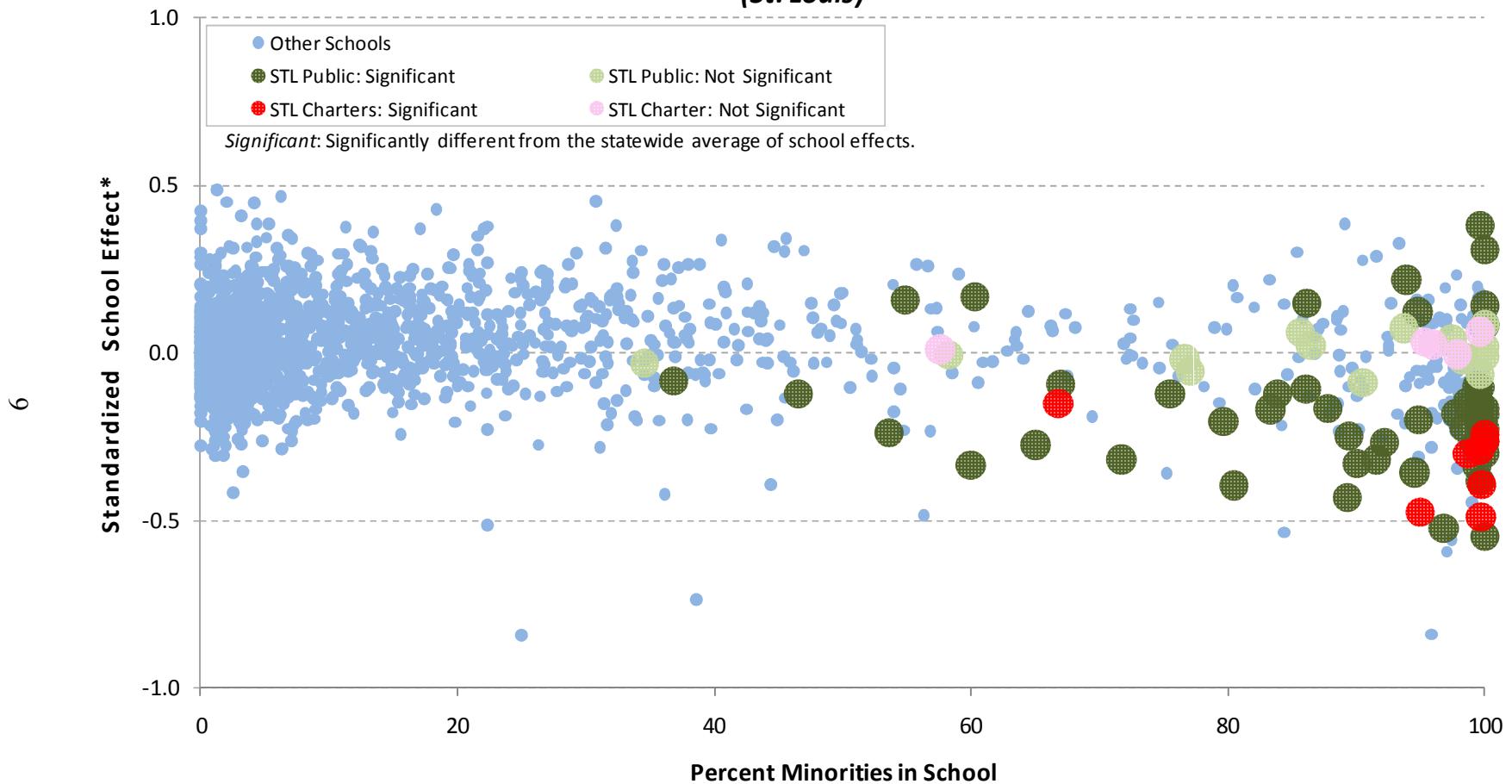
Legend:
- Other Schools
- STL Public: Significant
- STL Public: Not Significant
- STL Charters: Significant
- STL Charter: Not Significant

Significant: Significantly different from the statewide average of school effects.

Y-axis: Standardized School Effect*

X-axis: Percent Minorities in School

*Standardized School Effect$_i$ = (School Effect$_i$ - Average of School Effects) /StDev of Scale Scores

 (*StDev of Scale Scores* = Weighted Average of by-grade Stdev of Scale Scores, for grades 3-8)

Note: Number of schools = 1,762 (with more than 20 valid test scores in both subjects)

Figure 3. Standardized School Effects on MAP Math Performance
Ordered in Rank
(St. Louis)
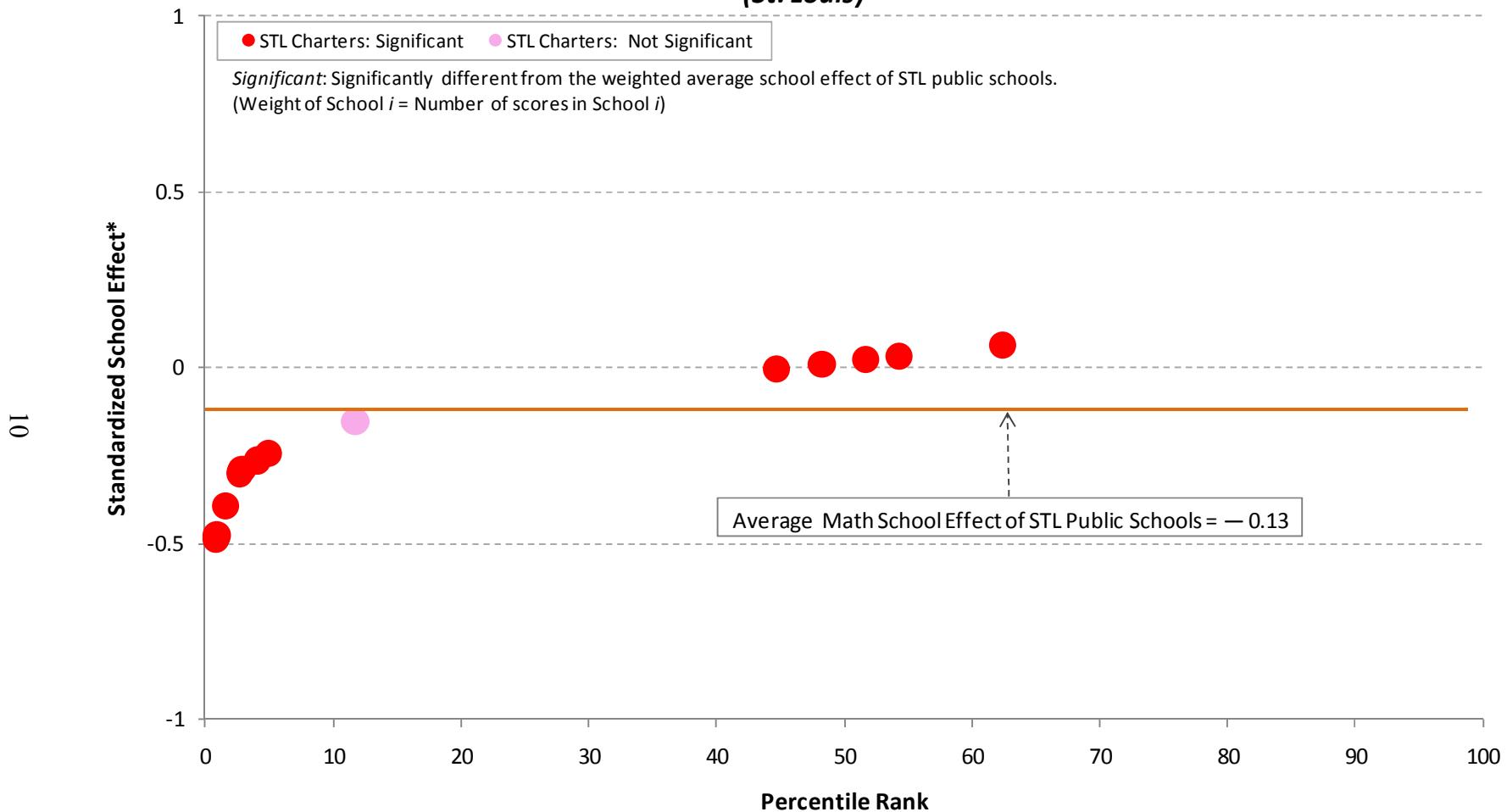
● STL Charters: Significant   ● STL Charters: Not Significant

Significant: Significantly different from the weighted average school effect of STL public schools.
(Weight of School i = Number of scores in School i)

Average Math School Effect of STL Public Schools = — 0.13

Standardized School Effect
Percentile Rank

10

*Standardized School Effect$_i$ = (School Effect$_i$ - Average of School Effects) /StDev of Level Scores
(*StDev of Level Scores* = Weighted Average of by-grade Stdev of Level Scores, for grades 3-8)

Figure 4. Standardized School Effects on MAP Com Arts Performance
vs. Percent Eligible for Free/Reduced Priced Lunch
(St. Louis)
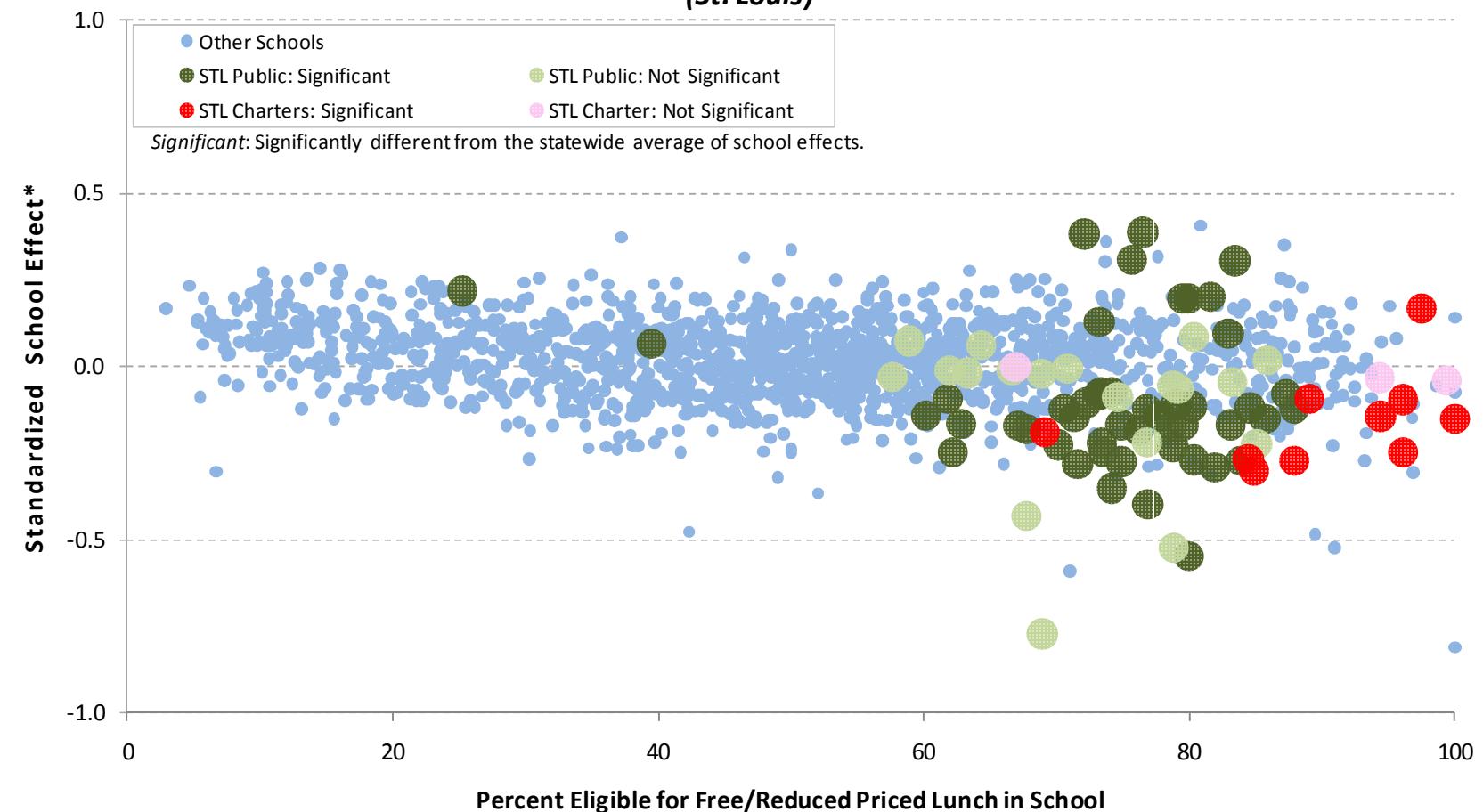
Legend:
- Other Schools
- STL Public: Significant
- STL Public: Not Significant
- STL Charters: Significant
- STL Charter: Not Significant

Significant: Significantly different from the statewide average of school effects.

Y-axis: Standardized School Effect*
X-axis: Percent Eligible for Free/Reduced Priced Lunch in School

*Standardized School Effect$_i$ = (School Effect$_i$ - Average of School Effects) /StDev of Scale Scores
(*StDev of Scale Scores* = Weighted Average of by-grade Stdev of Scale Scores, for grades 3-8)
Note: Number of schools = 1,762 (with more than 20 valid test scores in both subjects)

Figure 5. Standardized School Effects on MAP Com Arts Performance
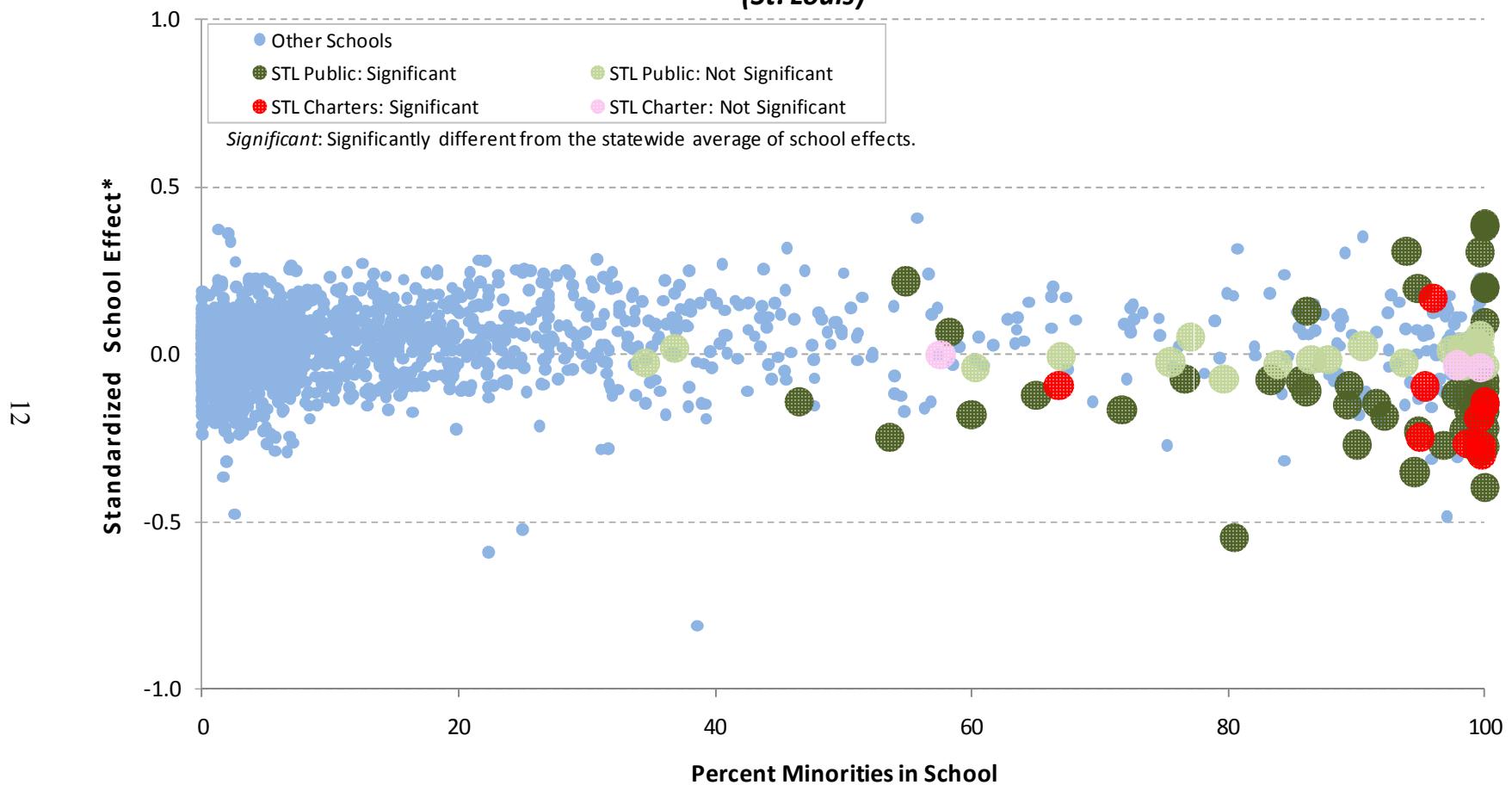
Percent Minorities
(St. Louis)

Legend:
- Other Schools
- STL Public: Significant
- STL Public: Not Significant
- STL Charters: Significant
- STL Charter: Not Significant

Significant: Significantly different from the statewide average of school effects.

Y-axis: Standardized School Effect*

X-axis: Percent Minorities in School

*Standardized School Effect$_i$ = (School Effect$_i$ - Average of School Effects) /StDev of Scale Scores
 (*StDev of Scale Scores* = Weighted Average of by-grade Stdev of Scale Scores, for grades 3-8)
Note: Number of schools = 1,762 (with more than 20 valid test scores in both subjects)

Figure 6. Standardized School Effects on MAP Com Arts Performance
## *Ordered in Rank*
(St. Louis)
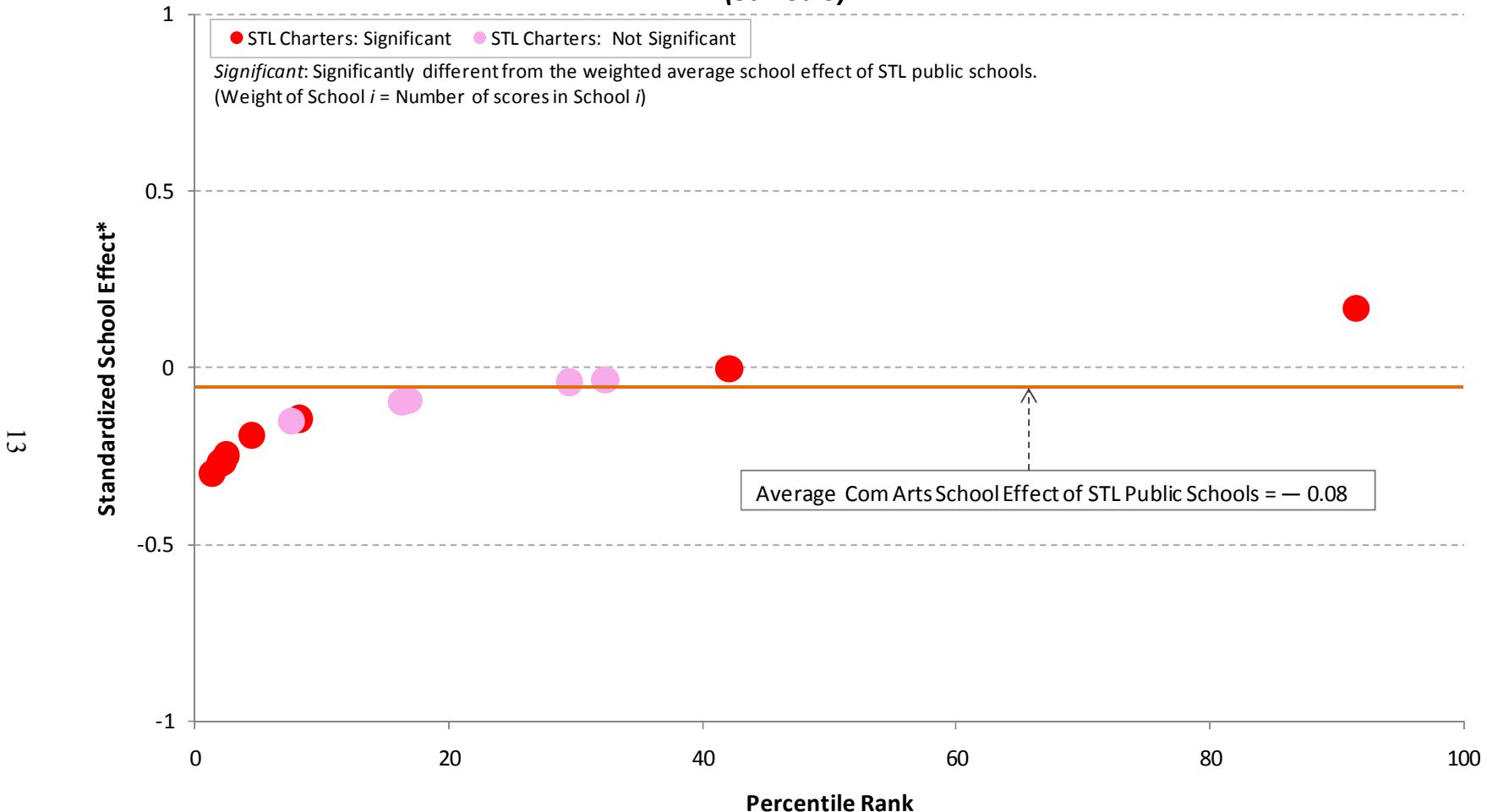
*Standardized School Effect$_i$ = (School Effect$_i$ - Average of School Effects) /StDev of Level Scores
 (*StDev of Level Scores* = Weighted Average of by-grade Stdev of Level Scores, for grades 3-8)

Figure 7. Standardized School Effects on MAP Math Performance
Percent Eligible for Free-Reduced Priced Lunch
(Kansas City)
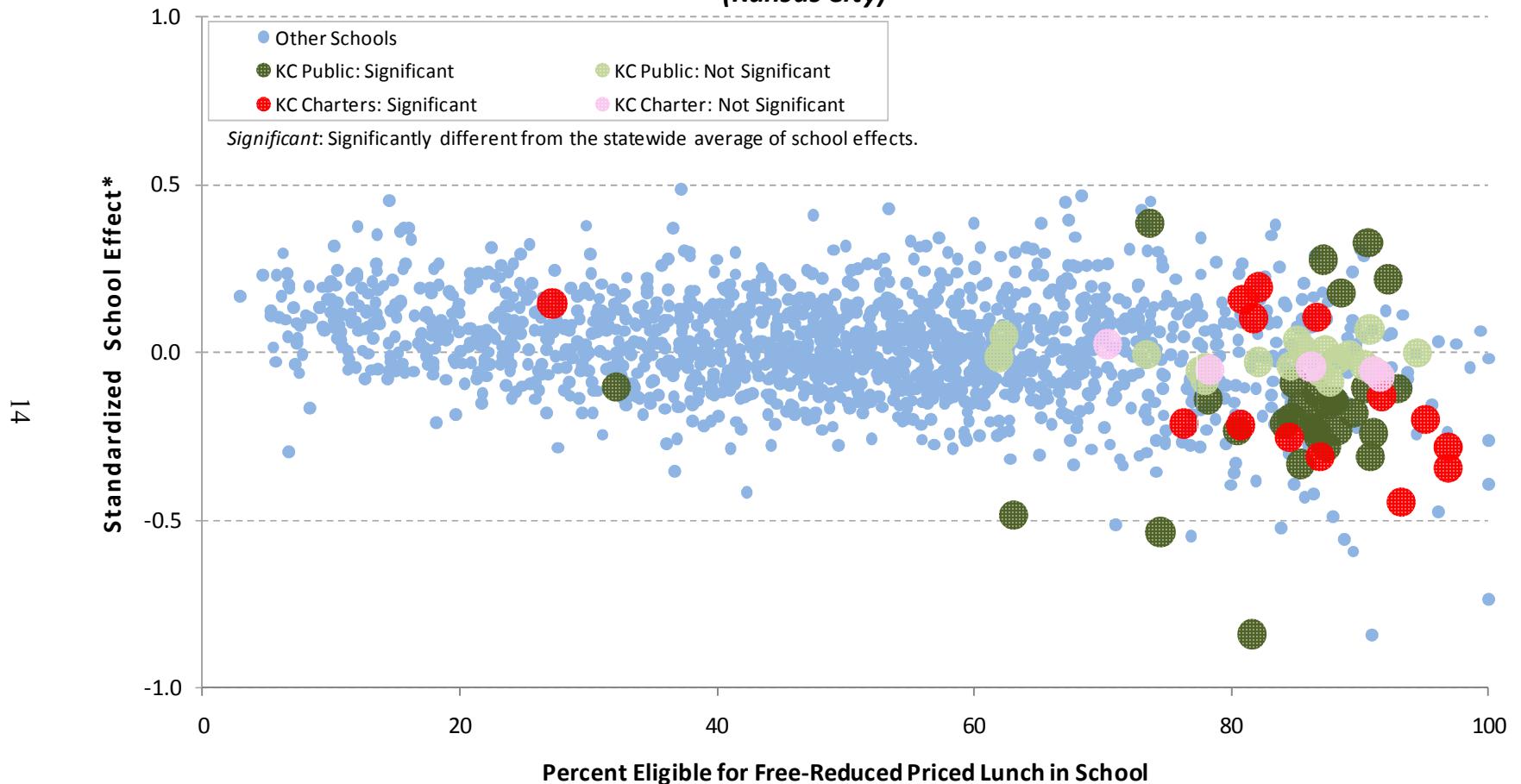
*Standardized School Effect$_i$ = (School Effect$_i$ - Average of School Effects) /StDev of Scale Scores
  (*StDev of Scale Scores* = Weighted Average of by-grade Stdev of Scale Scores, for grades 3-8)
Note: Number of schools = 1,762 (with more than 20 valid test scores in both subjects)

Figure 8. Standardized School Effects on MAP Math Performance
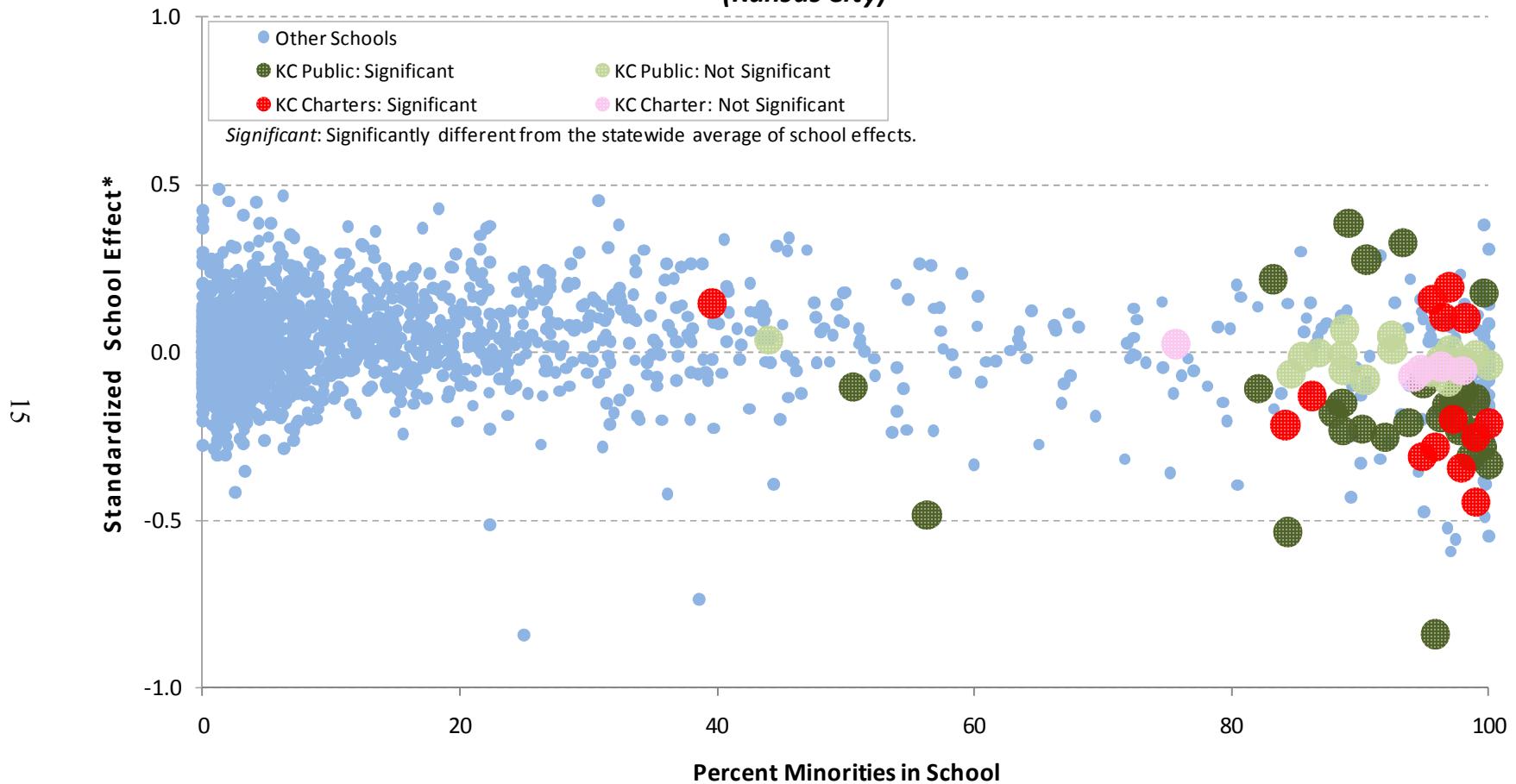
Percent Minorities
## *(Kansas City)*

*Standardized School Effect$_i$ = (School Effect$_i$ - Average of School Effects) /StDev of Scale Scores
 (*StDev of Scale Scores* = Weighted Average of by-grade Stdev of Scale Scores, for grades 3-8)
Note: Number of schools = 1,762 (with more than 20 valid test scores in both subjects)

**Figure 9. Standardized School Effects on MAP Math Performance**
Ordered in Rank
(Kansas City)
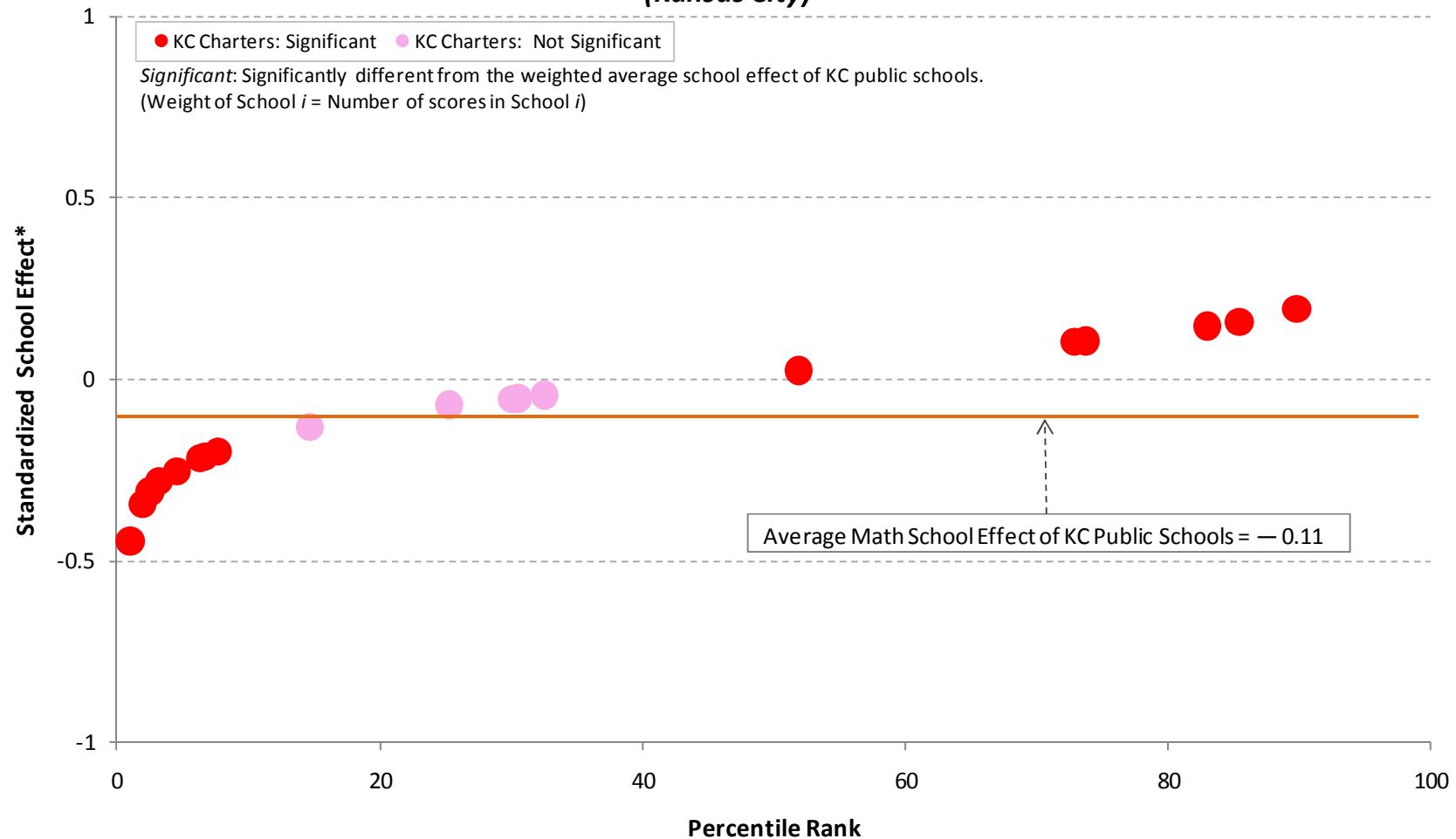
● KC Charters: Significant   ● KC Charters: Not Significant

Significant: Significantly different from the weighted average school effect of KC public schools.
(Weight of School *i* = Number of scores in School *i*)

Average Math School Effect of KC Public Schools = — 0.11

Standardized School Effect*

Percentile Rank

*Standardized School Effect$_i$ = (School Effect$_i$ - Average of School Effects) /StDev of Level Scores
(*StDev of Level Scores* = Weighted Average of by-grade Stdev of Level Scores, for grades 3-8)

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Figure 10. Standardized School Effects on MAP Com Arts Performance
Percent Eligible for Free-Reduced Priced Lunch
(Kansas City)
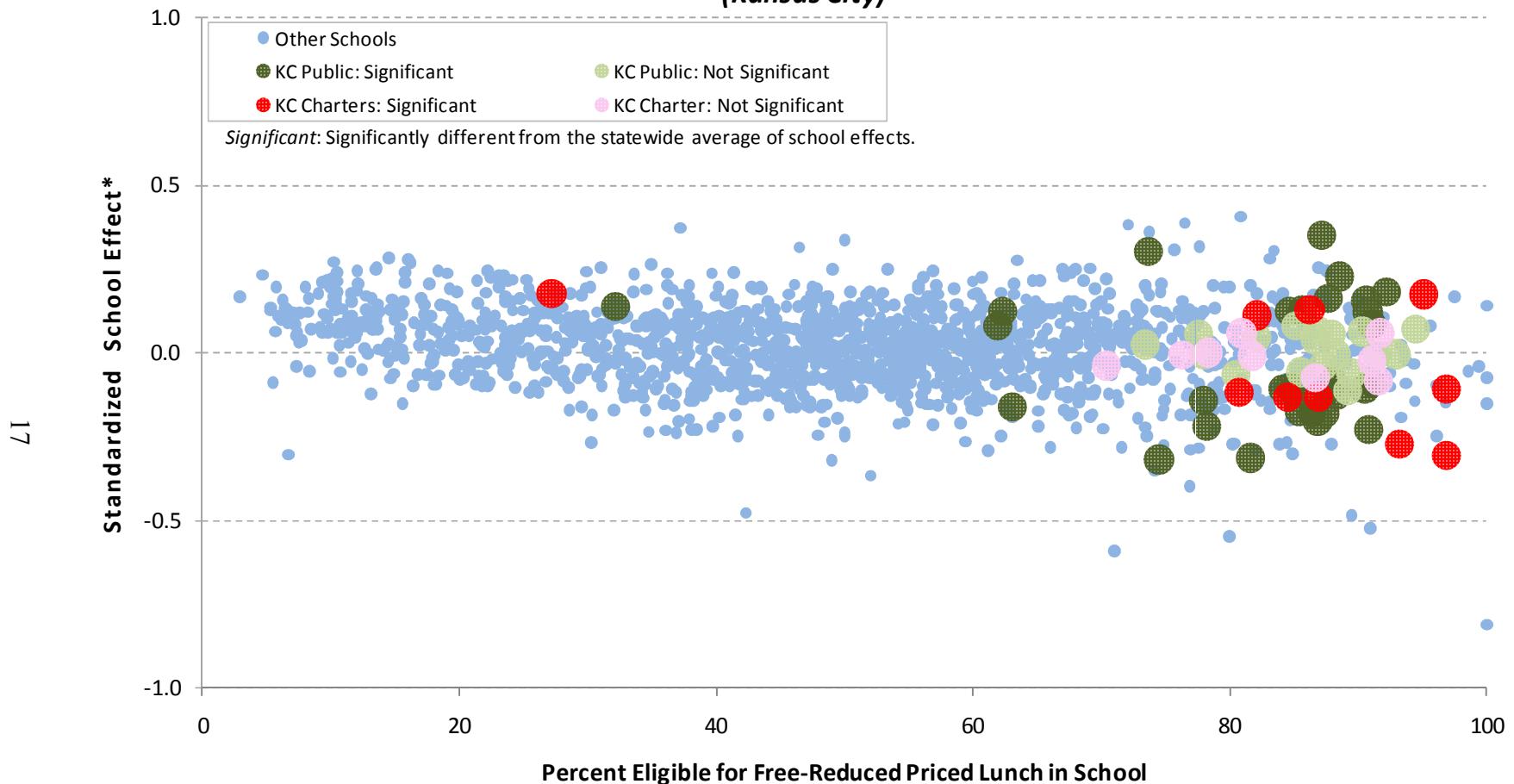
*Standardized School Effect$_i$ = (School Effect$_i$ - Average of School Effects) /StDev of Scale Scores
 (*StDev of Scale Scores* = Weighted Average of by-grade Stdev of Scale Scores, for grades 3-8)
Note: Number of schools = 1,762 (with more than 20 valid test scores in both subjects)

# Figure 11. Standardized School Effects on MAP Com Arts Performance
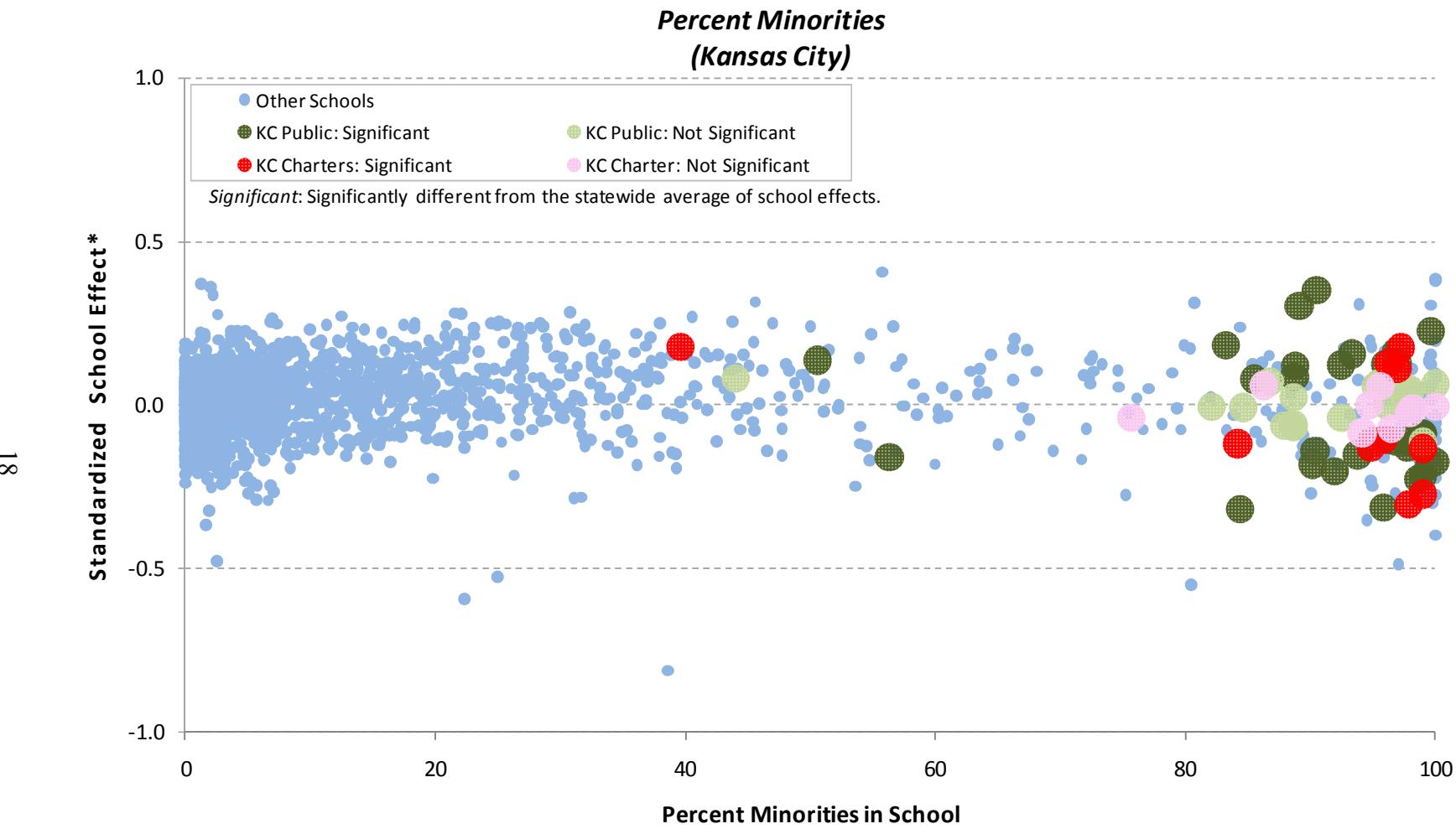
Percent Minorities
(Kansas City)

Legend:
- Other Schools
- KC Public: Significant
- KC Public: Not Significant
- KC Charters: Significant
- KC Charter: Not Significant

Significant: Significantly different from the statewide average of school effects.

Y-axis: **Standardized School Effect***

X-axis: **Percent Minorities in School**

*Standardized School Effect$_i$ = (School Effect$_i$ - Average of School Effects) /StDev of Scale Scores
 (*StDev of Scale Scores* = Weighted Average of by-grade Stdev of Scale Scores, for grades 3-8)
Note: Number of schools = 1,762 (with more than 20 valid test scores in both subjects)

Figure 12. Standardized School Effects on MAP Com Arts Performance
Ordered in Rank
(Kansas City)
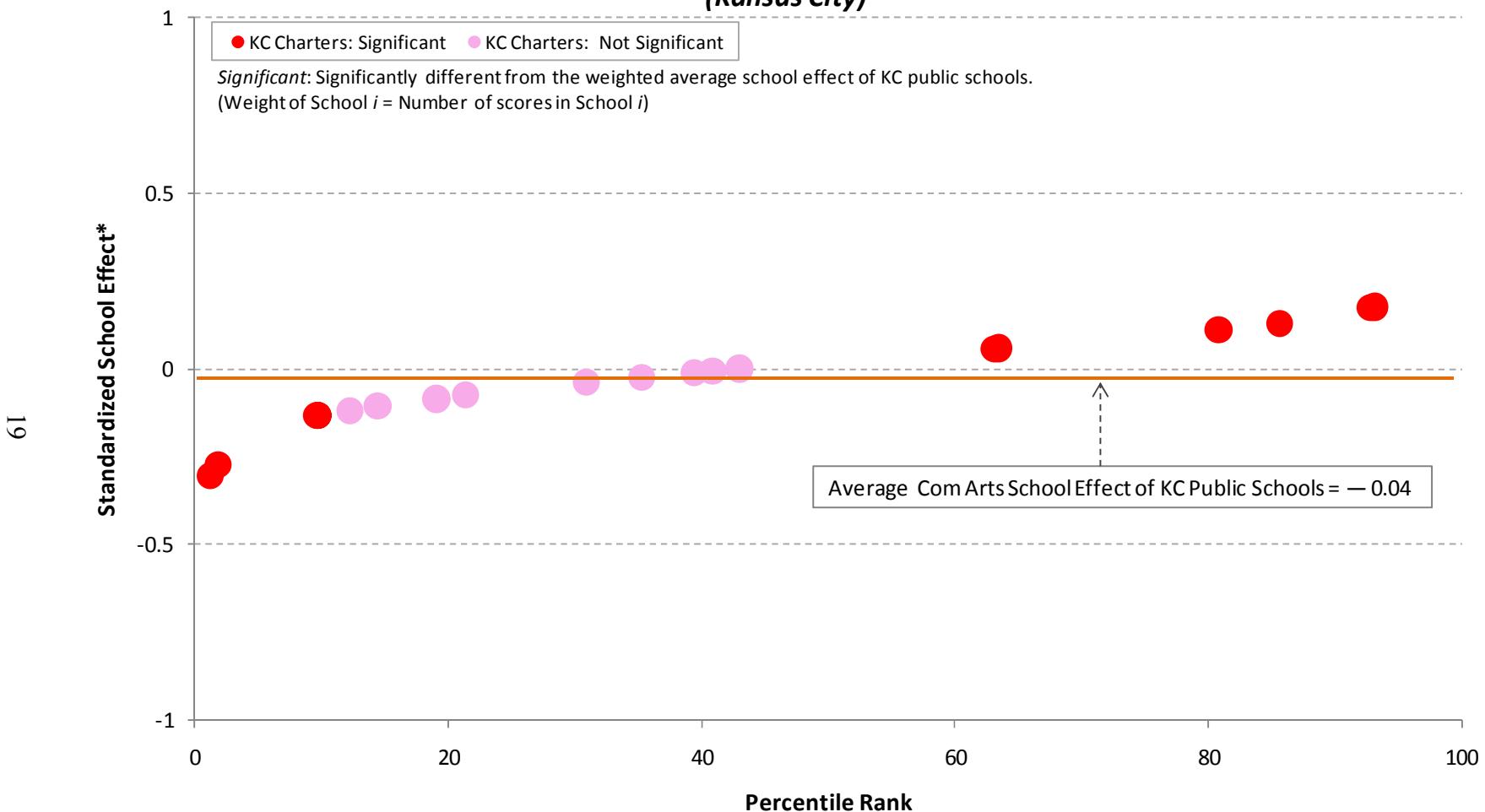
- KC Charters: Significant
- KC Charters: Not Significant

Significant: Significantly different from the weighted average school effect of KC public schools.
(Weight of School i = Number of scores in School i)

Average Com Arts School Effect of KC Public Schools = — 0.04

Standardized School Effect*

Percentile Rank

*Standardized School Effect$_i$ = (School Effect$_i$ - Average of School Effects) /StDev of Level Scores
(*StDev of Level Scores* = Weighted Average of by-grade Stdev of Level Scores, for grades 3-8)

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Figure 13. **Difference in Standardized School Effects**

Charter — Public
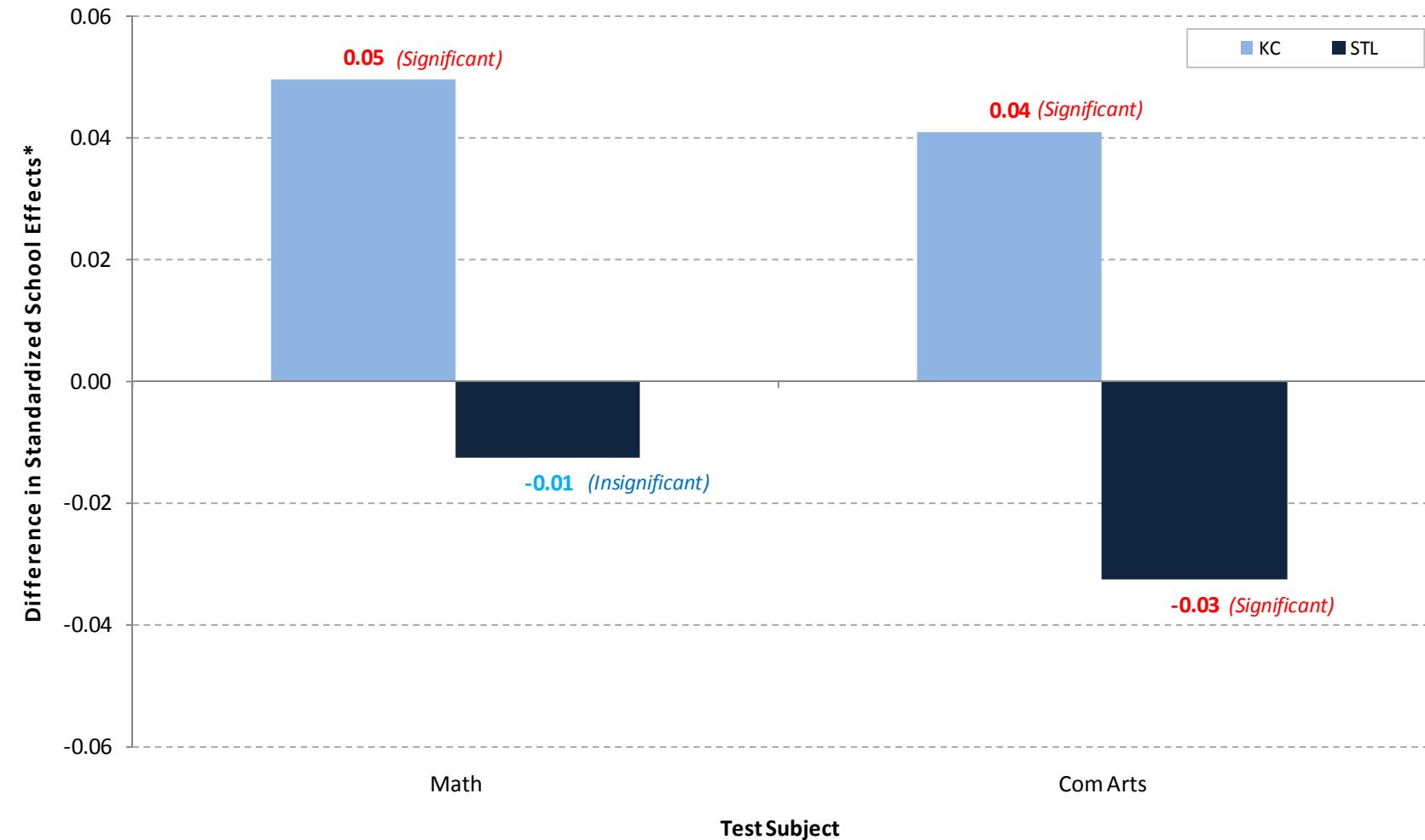
* Difference in Standardized School Effects = Standardized Charter School Effect - Standardized Public School Effect

  Standardized School Effect$_i$ = (School Effect$_i$ - Average of School Effects) /StDev of Level Scores

  (*StDev of Level Scores* = Weighted Average of by-grade Stdev of Level Scores, for grades 3-8)

Part B – Graduation Rates

Eight secondary charter schools reported graduation rates for the 2008-2009 academic year[6]. Four of five Kansas City charter schools reported graduation rates higher than the district graduation rate for Kansas City 33 School District, and three Kansas City charter schools have graduation rates higher than the state average (shown in blue in Figure 14). Of the three secondary charter schools in St. Louis, all three reported graduation rates higher than both the state average and the average for St. Louis Public Schools (shown in red in Figure 14).

Figure 14.   Charter School Graduation Rates 2008-2009
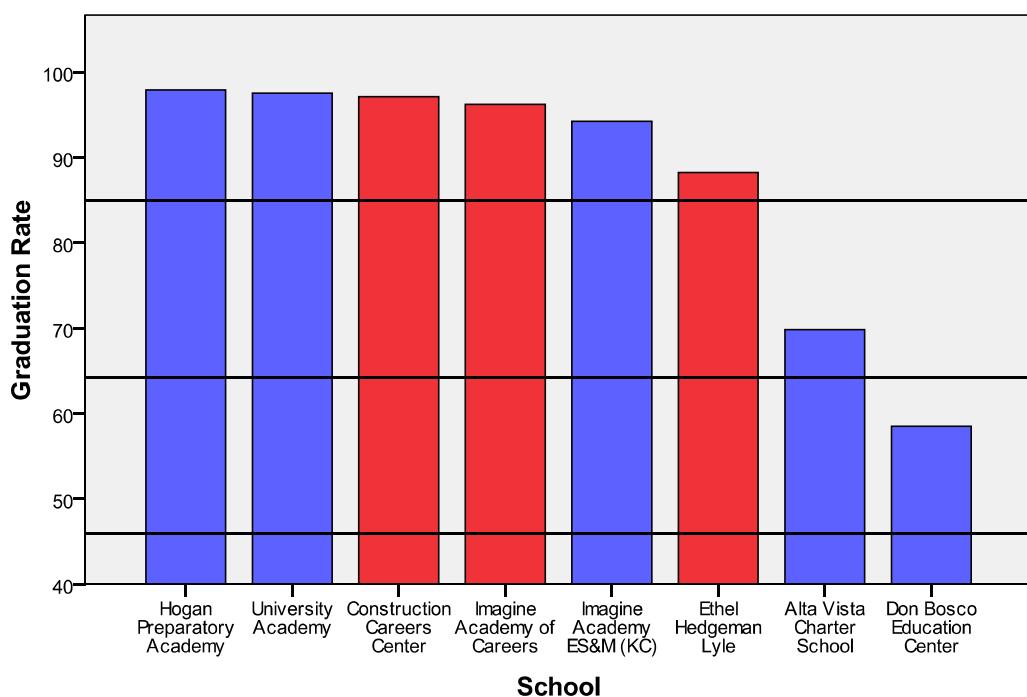
Reference lines: St. Louis Public Schools graduation rate - 45.9%; Kansas City Public Schools graduation rate - 64.2%; All Missouri Schools graduation rate - 85%

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[6] Two secondary schools do not have graduation rates included. Lee A. Tolbert Academy recently expanded to serve secondary students and currently serves through grade 11. Hope Academy in Kansas City opened in 2009-2010.

Section 2 – Administrative and Instructional Best Practices

Administrators from 15 schools and teacher focus groups from 12 schools[7] participated in interviews with the Executive Director of the Joint Committee on Education respond to questions on the administrative and instructional best practices at their school. The same set of questions was asked of all participants, and the responses are summarized below.

Charter school administrators and teachers shared a wide range of information about their schools. While much of what they discussed is not uncommon or could be replicated in a traditional public school, other ideas reflect a unique environment within the charter school. Responses represent the participants' perspective on the practices and culture of their school.

Part A – Administrator Interviews

Why did you choose to become the principal/director at this school?

A few of the administrators said they accepted their current position because they supported the concept of charter schools. Specific comments noted an appreciation for the diversity of staff and students, an awareness of the school's reputation, and an overall regard for the school's culture. Nearly half of the administrators had been promoted from assistant principal or teacher, and two were former administrators in traditional public schools who came to charter schools after retirement.

If you have previously been an administrator in another type of school (e.g., traditional public school, parochial), what is the most significant difference between that work environment and your current work environment? Do you have opportunities or flexibility as a principal/director in a charter school that were not available to you as a principal/director in a traditional public school? If so, please describe.

Several administrators had previous administrative experience outside of charter schools. When asked about the differences between their former work environment and their current work environment, the most common response was that they believed the charter school offered a more positive environment for kids than what they had experienced in traditional public schools. The next most common response of administrators was their ability for autonomous decision making in charter schools. However, this was not equal across charter schools as a few administrators whose schools were managed by EMOs noted

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[7] At three of the schools there were not teachers available to participate in a focus group.

that functions of staff hiring, food services contracts, and bus contracts were handled by the EMO.

Other issues administrators cited as distinct from their traditional public school experience were a noticeable lack of the presence of teacher organizations; a closer relationship with students, parents, and the community; and that charter schools can operate with a specific focus (e.g., language immersion, dropout recovery). The one negative aspect noted by administrators was lesser financial resources in the charter school.

What is the building philosophy on professional development?

Administrators identified several characteristics of the school's professional development practices although no one practice dominated the various responses. Some of the specific practices mentioned included individual teacher development plans, differentiated professional development based on level of experience, and professional development assistance from the sponsoring university. Other administrators noted support for teachers which included such things as university tuition reimbursements, financial support for National Board Certification, and mentoring for new teachers. In many situations, teachers had an active role in the professional development through leadership teams and peer teaching. Finally, a few administrators commented on the professional development of their school being driven by student achievement data and student needs and/or connected with the school's goals.

If there is one practice in your school that could be replicated and used to improve any school, what would that be?

Of the practices administrators identified in their school as most likely to be able to improve any school, the most common responses centered around school culture, namely a strong commitment to the school's mission by all staff. Most other responses were related to what the administrators noted regarding the school's professional development (e.g., instructional coaching, mentoring).

What is the biggest challenge your school faces?

Administrators noted a range of challenges faced by their school. The most common responses dealt with finances and facilities. A couple of the administrators mentioned the difficulty in offering salaries competitive with the local traditional school district. Aside from financial challenges, administrators discussed some of the challenges faced by their students: poverty, limited English proficiency, and poor prior academic preparation. A few of the administrators noted tensions with the local traditional public school district as a challenge. One administrator felt that he was challenged by what he saw

as the public perception of charter schools as a drain on traditional public school resources.

If you could change one thing about your school, what would it be?

Increased resources was the most common response from administrators regarding what they would change about their school. Other changes they would make which are not necessarily unique to charter schools included more parental involvement, higher attendance, higher academic outcomes, and higher teacher retention.

Part B – Teacher Focus Groups[8]

Why did you choose to teach at this school?

Teachers offered a variety of reasons for why they chose to teach at their school. Some mentioned simply wanted to teach in an urban setting while others specifically mentioned their support of the concept of charter schools. Teachers identified characteristics of their schools which drew them to teach there such as the positive culture, autonomy in teaching, the school's mission, or the school's reputation. A few teachers also identified practical reasons for teaching at their particular school: placement by Teach for America, a hiring freeze in the teacher's home state, or being recruited to teach at the school.

If you have previously taught in another type of school (e.g., traditional public school, parochial), what is the most significant difference between that work environment and your current work environment?

For teachers who had previously taught in traditional public school, they frequently noted their ability to make decisions about their teaching as the most common difference between teaching in a charter school and teaching in a traditional public school. Other frequent comments referenced the difference in culture between the teachers' experiences in traditional public schools and charter schools. Teachers also noted the student focus, collegiality among staff, greater efficiency for meeting student needs, and the accessibility of administrators among the experience with charter schools. A few teachers commented on their perception that teachers were more motivated in charter schools and attributed that to a variety of reasons including generally younger staff in charter schools and that teachers must earn their positions without the security of a union.

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[8] Aggregate data on the teachers who participated can be found in Appendix C.

Do you have opportunities or flexibility as a teacher in a charter school that would not be available to you as a teacher in a traditional public school? If so, please describe.

Like the response from administrators, teachers' favorable impression of having greater voice in decision making in charter schools was a common response when asked about opportunities afforded to them in charter schools. With this, most teachers were speaking about their teaching or curriculum decisions. Other comments reflected the same things teachers spoke of as differentiating their previous experience in traditional public schools from charter schools such as collaboration among staff, better access to administrators, and the opportunity to work more closely with students.

What is the building philosophy on professional development? What is the teachers' role in professional development?

All of the focus groups indicated that professional development was a priority in their school. Most indicated that regular time was set aside for professional development. They echoed many of the things raised by administrators such as a balance between external experts or offsite training and internal peer coaching or individual development. A few of the teachers mentioned that teachers in their school had a voice in deciding the professional development through such things as teacher surveys or serving on professional development committees. In addition, several teachers mentioned that their school's professional development was determined by student needs as shown through student achievement data. A couple of teachers noted receiving professional development support through their sponsoring institution or EMO.

If there is one practice in your school that could be replicated and used to improve any school, what would that be?

Of the practices in their school that teachers felt could improve any school, two ideas were noted most frequently: teacher empowerment in decision making and establishing a culture of trust in the school. When talking about teacher empowerment, one teacher group commented on the importance of quality teachers as one teacher stated, "You don't want to empower weak teachers." As for the culture of trust, teachers gave examples that affected all stakeholders in the school from ease of communication with administrators to positive peer pressure among the students to developing strong teacher-student relationships. Teachers also identified academic practices at their school which they felt would benefit any school including regular formative assessments, grouping students by ability/development rather than age, and the use of data to guide instruction.

What is the biggest challenge your school faces?

Teachers cited a variety of challenges their schools face. The most common challenge noted was parental involvement. Of the five teacher groups who mentioned this, four of them also felt the problem was exacerbated by the fact that their schools were not neighborhood schools. The next most common responses were that funding and facilities issues were a major challenge. Other challenges teachers mentioned were related to the students (some of which were unique to particular schools). Teachers identified attendance, behavior, academic achievement, language barriers with parents, and involuntary student mobility as challenges faced by their school.

If you could change one thing about your school, what would it be?

Many of the teachers cited the challenges they had previously mentioned as the one thing they would change about their school. In addition to those issues, teachers said they would like to see their school have higher teacher retention. They also offered ideas such as keeping the school open at night for community functions to help the school become an anchor for the community. Interestingly, some teachers wished to see their schools expand while others wanted to see an enrollment cap or even a reduction in enrollment.

Part C – Additional Charter School Features

During the interviews or in information provided by the school, several unique features of particular schools were noted. Those include

- On-site childcare for children of teachers and staff.
- Contracts and benefits (e.g., paid vacation) for full-time substitutes.
- Full-time translators on staff to assist students and parents.[9]
- Extended school day and/or extended school year.
- Before-school programs beginning at 6:30 a.m. and after-school programs until 5:30.
- Career-focused secondary school in close partnership with local trade organization.
- French language immersion school[10]

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[9] The English language learner population at the school is 62%.
[10] The school referenced is in Kansas City. French and Spanish language immersion schools also opened in 2009-2010 in St. Louis.

Appendix A

Missouri Charter Schools

School	Opened	Enrollment 2009-2010	Sponsor	Grades
St. Louis				
City Garden Montessori	2008-2009	80	SLU	K-4
Confluence Academies	2003-2004	3,011	MUS&T	K-10
Construction Careers Center	2001-2002	378	SLPS	9-12
Ethel Hedgeman Lyle	2000-2001	807	MBU	K-12
Imagine Academy of Academic Success	2007-2008	478	MBU	K-8
Imagine Academy of Careers	2007-2008	1,351	MBU	K-12
Imagine Academy of ES&M (StL)	2007-2008	1,339	MBU	K-8
KIPP Inspire Academy	2009-2010	83	Wash U	5
Lift for Life Academy	2000-2001	434	SEMO	6-10
Northside Community School	2009-2010	54	UMSL	K-5
Paideia Academy	2002-2003	505	MUS&T	K-8
St. Louis Charter School	2000-2001	913	UMSL	K-8
St. Louis Language Immersion	2009-2010	170	UMSL	K-1
Kansas City				
Academie Lafayette	1999-2000	563	UCM	K-8
Allen Village Charter	1999-2000	406	UMKC	K-8
Alta Vista Charter School	1999-2000	193	UCM	9-12
Benjamin Banneker Charter Academy	1999-2000	344	UCM	K-8
Brookside Charter	2002-2003	490	UMKC	K-11
Della Lamb Elementary	1999-2000	453	UCM	K-8
Derrick Thomas Academy	2002-2003	901	UMKC	K-8
Don Bosco Education Center	1999-2000	250	UCM	9-12
Frontier School of Innovation	2009-2010	303	UMKC	K-5
Genesis School Inc.	1999-2000	154	UMKC	6-9
Gordon Parks Elementary	1999-2000	217	UCM	K-5
Hogan Preparatory Academy	1999-2000	348	UCM	9-12
Hope Academy	2009-2010	215	UMKC	9-12
Imagine Academy ES&M (KC)	2007-2008	1,255	MU	K-12
KIPP Endeavor Academy	2007-2008	170	MCC-PV	5-6
Lee A. Tolbert Academy	1999-2000	624	UMKC	K-12
Pathway Academy	2009-2010	436	UMKC	K-8
Scoula Vita Nuova	1999-2000	224	UCM	K-8
University Academy	2000-2001	1,085	UMKC	K-12
Urban Community Leadership Academy	1999-2000	201	UCM	5-9

Total 2009-2010 enrollment in St. Louis charter schools   9,603
Total 2009-2010 enrollment in Kansas City charter schools   8,832

Appendix B

Attendance Rates and Reenrollment Rates

School	Attendance Rate 2008-2009 (%)	Reenrollment Rate 2008-2009 to 2009-2010 (%)
St. Louis		
City Garden Montessori	n/a	n/a
Confluence Academies	91.1	83.9
Construction Careers Center	63.3	63.3
Ethel Hedgeman Lyle	94.6	n/a[11]
Imagine Academy of Academic Success	87.8	67.0
Imagine Academy of Careers	88.9	68.4
Imagine Academy of ES&M (StL)	93.2	71.7
KIPP Inspire Academy	n/a	n/a
Lift for Life Academy	94.6	89.8
Northside Community School	n/a	n/a
Paideia Academy	93.1	71.7
St. Louis Charter School	95.3	93.1
St. Louis Language Immersion	n/a	n/a
Kansas City		
Academie Lafayette	95.2	96.1
Allen Village Charter	97.6	74.8
Alta Vista Charter School	92.8	84.6
Benjamin Banneker Charter Academy	89.6	55.0
Brookside Charter	94.5	73.5
Della Lamb Elementary	89.1	81.6
Derrick Thomas Academy	90.1	62.9
Don Bosco Education Center	66.0	63.7
Frontier School of Innovation	n/a	n/a
Genesis School Inc.	88.5	23.3
Gordon Parks Elementary	94.0	65.3
Hogan Preparatory Academy	93.8	75.1
Hope Academy	n/a	n/a
Imagine Academy ES&M (KC)	90.0	67.7
KIPP Endeavor Academy	96.6	69.5
Lee A. Tolbert Academy	92.9	78.3
Pathway Academy	n/a	n/a
Scoula Vita Nuova	95.1	87.2
University Academy	94.2	88.5
Urban Community Leadership Academy	88.1	44.0

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[11] Ethel Hedgeman Lyle became an independent school in 2009-2010 after previously being part of another school managed by an EMO.

Charter School Attendance Rates 2008-2009

School

Don Bosco Education Center
Construction Careers Center
Imagine Academy of Academic Success
Urban Community Leadership Academy
Genesis School Inc.
Imagine Academy of Careers
Della Lamb Elementary
Benjamin Banneker Charter Academy
Imagine Academy ES&M (KC)
Derrick Thomas Academy
Confluence Academies
Alta Vista Charter School
Lee A. Tolbert Academy
Paideia Academy
Imagine Academy ES&M (StL)
Hogan Preparatory Academy
Gordon Parks Elementary
University Academy
Brookside
Lift for Life Academy
Ethel Hedgeman Lyle
Scoula Vita Nuova
Academie Lafayette
St. Louis Charter School
KIPP Endeavor Academy
Allen Village Charter

Attendance Rate

100 90 80 70 60 50

Reference lines: Kansas City Public Schools - 90.5% attendance rate; St. Louis Public Schools - 90.3% attendance rate; All Missouri schools - 95.1% attendance rate

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Appendix C

Data Preparation Procedures

We retrieved individual MAP records from the data set maintained on OSEDA, and processed the data in four steps. Data preparation procedures were designed to support our ultimate goal of performing analytical examination of test scores and drawing inferences. We completed four data management and cleaning steps for the mathematics and communication arts exam scores, as follows:

> Step 1) Delete the records assigned to identified "special" education districts.
> Step 2) Identify and delete records with invalid and/or duplicate MOSIS IDs.
> Step 3) Identify and count matching records for all possible combination of years.
> Step 4) Identify and count matching records with proper grade increments.

We conducted the data cleaning and preparation on all test records with a valid test score.

Table 1 reports record counts for both Math and Communication Arts in each year, along with reductions due to data cleaning and preparation. We note that the number of records removed due to bad or duplicate MOSIS IDs drastically diminishes between 2006 and 2007, and continues to decline in 2008. (Note that a substantial drop in MAP counts occurs in 2009 because the 10th grade MAP math and the 11th grade MAP Communication Arts exams were no longer mandatory.)

Table C-1. MAP Record Counts after Data Preparation Steps

		2006	2007	2008	2009
Math	All	474,094	469,624	467,183	399,718
	Excluding Special Districts	472,791	468,415	466,077	399,108
	Excluding Bad Records	466,989	467,474	465,722	398,831
Communication Arts	All	463,866	461,311	460,466	399,413
	Excluding Special Districts	462,678	460,231	459,380	398,803
	Excluding Bad Records	457,105	459,340	458,962	398,524

After removing all records with invalid and duplicate MOSIS IDs, we ended up with 1,799,016 test score records for 790,604 students with a unique MOSIS State ID and at least one Math record. For Communication Arts, we were left

with 1,773,931 test score records for 828,308 students with a unique MOSIS State ID and at least one Communication Arts test record.

We then counted the matching records with proper grade increment. Table A-2 presents for each subject and grade the number of matched records and the corresponding match rate. Since a non-missing terminal-year record (i.e., the second year in the paired scores) is required for analysis, we calculated the match rate to be the number of matched records as a percentage of the number of total valid records in the terminal year. As shown in the table, match rates are relatively constant across grade levels within any reported combination.

Table C-2. Number of Records for the 2-Year Matched, Non-Retained in Grade

	Grade	Number of Matches			Match Rate		
		2006-2007	2007-2008	2008-2009	2006-2007	2007-2008	2008-2009
Math	4	60,247	62,884	62,631	94.3%	94.7%	94.7%
	5	60,833	61,709	63,452	94.3%	94.7%	95.0%
	6	61,295	61,678	61,994	93.9%	94.5%	94.6%
	7	61,762	62,128	62,128	93.6%	94.2%	94.8%
	8	64,658	63,007	62,743	93.0%	93.7%	94.4%
Com Arts	4	59,903	62,612	62,526	94.3%	94.7%	94.7%
	5	60,619	61,576	63,402	94.4%	94.7%	95.0%
	6	61,087	61,655	61,938	93.2%	94.6%	94.7%
	7	61,298	62,130	62,137	94.0%	94.3%	94.8%
	8	64,140	62,684	62,775	93.1%	93.8%	94.5%

* Grade is terminal-year grade of each match.
* Denominator of match rate is the number of valid records in terminal-year of each match.

Appendix D

Regression Coefficients and Related Statistical Estimates

	Math		Communication Arts	
	Dependent Variable			
	Coefficient	T-Statistic	Coefficient	T-Statistic
Past Scores:				
First-Year Scale Score in Math	- 0.34194**	- 30.81	0.19145**	18.91
Squared First-Year Scale Score in Math	- 0.00003**	- 3.37	0.00001	0.98
First-Year Scale Score in Com Arts	- 0.48245**	- 38.19	- 0.54505**	- 47.30
Squared First-Year Scale Score in Com Arts	0.00054**	55.42	0.00007**	7.84
Indicators for Student Characteristics:				
American-Indian	- 0.92858**	- 2.72	0.08011	0.26
Asian/Pacific Islander	4.64526**	26.53	1.49822**	9.38
Black	- 4.08531**	- 47.43	- 1.64919**	- 20.99
Hispanic	- 0.89970**	- 6.46	- 0.09035	- 0.71
Female	- 2.16402**	- 48.82	3.60541**	89.18
Special Education	- 6.16846**	- 86.27	- 8.07978**	-123.90
Limited English Proficiency	0.24188	1.38	- 2.12545**	- 13.32
Free/Reduced Price Lunch Eligibility	- 2.37397**	- 46.78	- 2.38827**	- 51.61
In the School Less Than a Full School Year	- 3.33210**	- 29.97	- 2.63134**	- 25.95
Indicators for Grade and Year:				
Terminal-year Grade 4	-19.46713**	-157.16	- 8.14487**	- 72.10
Terminal-year Grade 5	-18.22465**	-161.81	- 6.14417**	- 59.81
Terminal-year Grade 6	-13.95812**	-170.22	-16.47484**	-220.29
Terminal-year Grade 7	-17.73426**	-254.94	-12.02678**	-189.57
Dummy for 2006-2007	- 0.45133**	- 8.40	- 1.45330**	- 29.67
Dummy for 2007-2008	- 0.60767**	- 11.47	- 0.24555**	- 5.08
	R^2 = 0.251		R^2 = 0.308	

Number of School Effects = 1,773 (except the reference school)
Sample Size(Number of Gainscores) = 926,358
** denotes that coefficient is significant at 1% level.

Appendix E

Teacher Focus Group Characteristics

N = 61 teachers in 12 schools

Teaching Experience	Mean	Minimum	Maximum
Years teaching in current charter school	3.8	0	10
Years of previous teaching in another setting	5.0	0	21

Teacher Preparation	n	%
Alternative or accelerated program at a college or university	10	16.4%
Alternative certification program (e.g., ABCTE)	2	3.3%
Alternative preparation program (e.g., Teach for America)	2	3.3%
Content area degree, no certification	3	4.9%
Teacher preparation program at a college or university/degree in education	42	68.9%
Other[12]	2	3.3%

Teacher Certification	n	%
Regular certification	48	78.7%
Provisional certification	5	8.2%
Temporary certification	2	3.3%
No certification	1	1.6%
Other[13]	4	6.6%

Level Taught	n	%
Elementary	28	45.9%
Middle	14	23.0%
Secondary	19	31.1%

Content Area	n	%
Art	2	3.3%
Elementary, classroom teacher	20	32.8%
Foreign Language	4	6.6%
Language Arts	8	13.1%
Math	5	8.2%
P.E.	2	3.3%
Science	4	6.6%
Social Studies	4	6.6%
Special Education	4	6.6%
Specialist (e.g., library/media specialist, counselor	5	8.2%

Previous Teaching Experience	n	%
Traditional public school	25	41.0%
Private, parochial	1	1.6%
Private, non-parochial	1	1.6%
Another charter school	5	8.2%
Multiple settings	13	21.3%
No previous teaching experience	14	23.0%

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[12] One certified in occupational therapy; one with certification from an international institution.

[13] One occupational therapy license; three working toward certification requirements.

Appendix F

Other Reports or Studies Including Missouri Charter Schools

1. "Public School in St. Louis: Place, Performance, and Promise." Report prepared by IFF and funded by the National Association of Charter School Authorizers. July 2009.
   http://www.iff.org/images/IFF_PDFs/STL-Report.pdf

   The report is an analysis of the supply and demand of public school options by geographical areas within the city of St. Louis.
   Note: This report was funded by the National Association of Charter School Authorizers.

2. "Multiple Choice: Charter School Performance in 16 States." Center for Research on Educational Outcomes, Stanford University. June 2009.

   Full report:
   http://credo.stanford.edu/reports/MULTIPLE_CHOICE_CREDO.pdf.

   Subsection on Missouri charter schools:
   http://credo.stanford.edu/reports/MO_CHARTER%20SCHOOL%20REPORT_CREDO_2009.pdf.

   This study is a multistate analysis of student achievement gains of charter school students compared with their public school peers using longitudinal data.

Appendix G

Survey Data Provided by Charter Schools

The following schools submitted parent, student, and/or teacher survey they collected.

- Allen Village
- Brookside Charter School
- Derrick Thomas Academy
- Ethel Hedgeman Lyle Academy (Elementary)
- Genesis School
- Imagine Renaissance Academy of Environmental Math and Science (Kansas City)
- Imagine Academy of Environmental Science and Math (St. Louis)
- Imagine Academy of Careers
- Imagine Academy of Academic Success
- St. Louis Charter School
- University Academy

Paper copies of these surveys are available for review in the office of the Joint Committee on Education, Rm. 502, State Capitol.